CHAPTER 5

CERTIFIED DUAL-POINT RIGGING PROCEDURES FOR TANDEM LOADS

5-1. INTRODUCTION

This chapter contains rigging procedures for dual-point tandem loads that have been certified for sling load. Each rigging procedure is found in a paragraph that includes a description of the load, materials required for rigging, and steps to complete the procedure. An applicability paragraph is also a part of each paragraph and identifies the certified loads. The certified dual-point rigging procedures for tandem loads are in this section. Paragraphs 5-2 through 5-19 give detailed instructions for rigging loads.

NOTE: Reach Pendants may be used on dual point loads. Place a Reach Pendant on each apex fitting. A static discharge person is not required when using a Reach Pendant.

5-2. M998/M1038 Truck, Utility, 1-1/4 Ton (HMMWV) with M101A1/A2 Trailer, Cargo

a. Applicability. The following items in Table 5-1 are certified for the helicopter(s) listed in the following table by the US Army Soldier Systems Center:

NOTE:

Field commanders should note that minor bending of the front wall of the M101A1/M101A2 trailer may occur as a result of sling loading due to the compression from the slings. The possibility of bending does not pose a safety threat to flight or ground personnel and will not affect the operation of the trailer.

Table 5-1. M998/M1038 Truck, Utility, 1-1/4 Ton with M101A1/A2 Trailer, Cargo

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/ REAR	TYPE OF AIRCRAFT	RECOMMENDED AIRSPEED (KNOTS)
Truck, 1-1/4 Ton, HMMWV, M998, Empty	5,200	10K	76/3	CH-47	100
Truck, 1-1/4 Ton, HMMWV, M998, Loaded	7,700	10K	76/3	CH-47	110
Truck, 1-1/4 Ton, HMMWV, M1038, Empty	5,327	10K	76/3	CH-47	100
Truck, 1-1/4 Ton, HMMWV, M1038, Loaded	7,700	10K	76/3	CH-47	110
Trailer, Cargo, M101A1/M101A2, Empty	1,280	10K	59/36	CH-47	100
Trailer, Cargo, M101A1/M101A2, Loaded	2,780	10K	59/36	CH-47	110

NOTES:
1. The maximum certified combined load weight is 10,480 pounds.
2. The recommended airspeed for combined loads weighing 6,607 pounds or less is 100 knots.
3. The recommended airspeed for combined loads weighing between 6,607 and 10,480 pounds or less is 110 knots.

b. Materials. The following materials are required to rig this load:

(1) Sling set (10,000-pound capacity) (2 each).

(2) Tape, adhesive, pressure-sensitive, 2-inch wide roll.

(3) Cord, nylon, Type III, 550-pound breaking strength.

(4) Webbing, cotton, 1/4-inch, 80-pound breaking strenth.

(5) Strap, cargo, tie-down, CGU-1/B (2 each, or more as required to secure cargo).

(6) Reach Pendant, 11K or 25K, OPTIONAL EQUIPMENT.

c. Personnel. Two persons can prepare and rig the M998/M1038 HMMWVs in 15 minutes. Two persons can prepare and rig the M101A1/M101A2 trailer in 10 minutes.

d. Procedures. Attach the trailer to the truck by placing the lunette on the pintle hook and securing the latch. Secure the safety chains, cables, and hoses to the trailer. Position the vehicle on level ground so both the truck and trailer are in a straight line. The following procedures apply to this load:

(1) Preparation. Prepare the load using the following steps:

(a) Fold mirrors forward in front of the windshield and tie together with Type III nylon cord. Remove the doors and secure to the seats with Type III nylon cord.

(b) Secure all equipment and cargo inside the truck with tie-down straps, tape, or Type III nylon cord.

(c) Ensure the fuel tank is not over 3/4 full. Inspect fuel tank cap, oil filler cap, and battery caps for proper installation.

(d) Engage the vehicle parking brake and put the transmission in neutral.

(e) Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard.

(f) Secure all equipment and cargo inside the trailer with tie-down straps, tape, or Type III nylon cord.

(g) Place the tailgate in the open position.

(h) Remove the tarp and front rack and place it in the bed of the trailer. Place the accompanying load on top of the front rack. Secure the accompanying load to the trailer using tie-down straps. Route the straps diagonally across the load from the tailgate hinge to the front lifting shackles.

(i) Ensure the parking brake is set.

(j) Attach the hook portion of a CGU-1/B tie-down strap down to the left front lift provision on the trailer. Connect the ratchet to the left inside tie-down provision located near the pintle.

(k) Repeat the above procedure on the right side of the load.

(l) Tighten both CGU-1/B tie-down straps at the same time. Safety the ratchet handles in the closed position with tape.

(2) Rigging. Rig the load according to the steps in Figure 5-1.

(3) Hookup. Two hookup teams are required for this load. The static wand person stands in the bed of the HMMWV and discharges the static electricity with the static wand. The forward hookup person stands in the bed of the HMMWV and places apex fitting 1 onto the forward cargo hook. The aft hookup person stands in the bed of the trailer and places apex fitting 2 onto the aft cargo hook. The hookup team then carefully dismounts the trailer and remains close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous

5-10. M1097 Shelter Carrier (HMMWV) with S-250 Shelter and Trailer Generator Sets on M116A2 Trailer

a. Applicability. The following items in Table 5-9 are certified for the helicopter(s) listed in the following table by the US Army Soldier Systems Center:

Table 5-9. M1097 Shelter Carrier (HMMWV) with S-250 Shelter and Trailer Generator Sets on M116A2 Trailer

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/ REAR	TYPE OF AIRCRAFT	RECOMMENDED AIRSPEED (KNOTS)
Truck, (HMMWV) M1097 with AN/TSC-93A in S-250 Shelter	9,769	25K	64/22	CH-47	110
PU-753 Generator Set on M116A2 Trailer	3,000	25K	72/56	CH-47	110
Truck, (HMMWV) M1097 with S-250 Shelter, LOS (V1)	9,038	25K	60/20	CH-47	120
Truck, (HMMWV) M1097 with S-250 Shelter, LOS (V2)	9,038	25K	60/20	CH-47	120
Truck, (HMMWV) M1097 with S-250 Shelter, LOS (V3)	9,038	25K	60/20	CH-47	120
Truck, (HMMWV) M1097 with S-250 Shelter, LOS (V4)	9,038	25K	60/20	CH-47	120
PU-751 Generator Set on M116A2 Trailer	3,062	25K	10/15	CH-47	120

b. Materials. The following materials are required to rig this load:

(1) Sling set (25,000-pound capacity) (2 each).

(a) Chain length, part number 38850-00053-102, from a 25,000-pound capacity sling set (8 each).

(b) Coupling link, part number 664241, from a 25,000-pound sling set (8 each).

(2) Tape, adhesive, pressure-sensitive, 2-inch wide roll.

(3) Cord, nylon, Type III, 550-pound breaking strength.

(4) Webbing, cotton, 1/4-inch, 80-pound breaking strength.

(5) Strap, cargo, tiedown, CGU-1/B (2 each).

(6) Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.

c. Personnel. Two persons can prepare and rig the M1097 HMMWV in 15 minutes. Two persons can prepare and rig the generator set in 10 minutes.

d. Procedures. Attach the generator set to the truck by placing the lunette on the pintle hook and securing the latch with tape or Type III nylon cord. Secure the safety chains, cables, and hoses. Position the vehicle on level ground so both the truck and generator set are in a straight line. The following procedures apply to this load:

(1) Preparation. Prepare the load using the following steps:

(a) Fold mirrors inward and tie together with Type III nylon cord. Remove the doors and secure to the seats with Type III nylon cord.

(b) Ensure the shelter is secured to the vehicle using wire rope or tiedown straps. Secure all loose equipment inside the shelter with tape, Type III nylon cord, or tie-down straps. Close and secure the door.

(c) Secure all equipment and cargo inside the truck with tiedown straps, tape, or Type III nylon cord.

(d) Ensure the fuel tanks are not over 3/4 full. Inspect the fuel tank cap, oil filler cap, and battery caps for proper installation.

(e) Engage the vehicle parking brake and put the transmission in neutral.

(f) Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard.

(g) Install the lift provisions on the outer ends of the rear bumper by removing the tiedown provisions located on the front bumper and installing on the outer ends of the front bumper and installing on the outer ends of the rear bumper.

(h) Partially retract all landing legs and secure in position with Type III nylon cord.

(i) Retract the lunette leg and secure with Type III nylon cord.

(j) Secure all lids, doors, and caps with tape or Type III nylon cord.

(k) Ensure the parking brake is set.

(l) Route the hook portion of a CGU-1/B tiedown strap through the left rear inboard tiedown provision located near the pintle on the rear bumper of the truck and through the mounting bracket on the front of the trailer A-frame. Connect the hook to the ratchet of the CGU-1/B.

(m) Repeat the above procedure on the right side of the load.

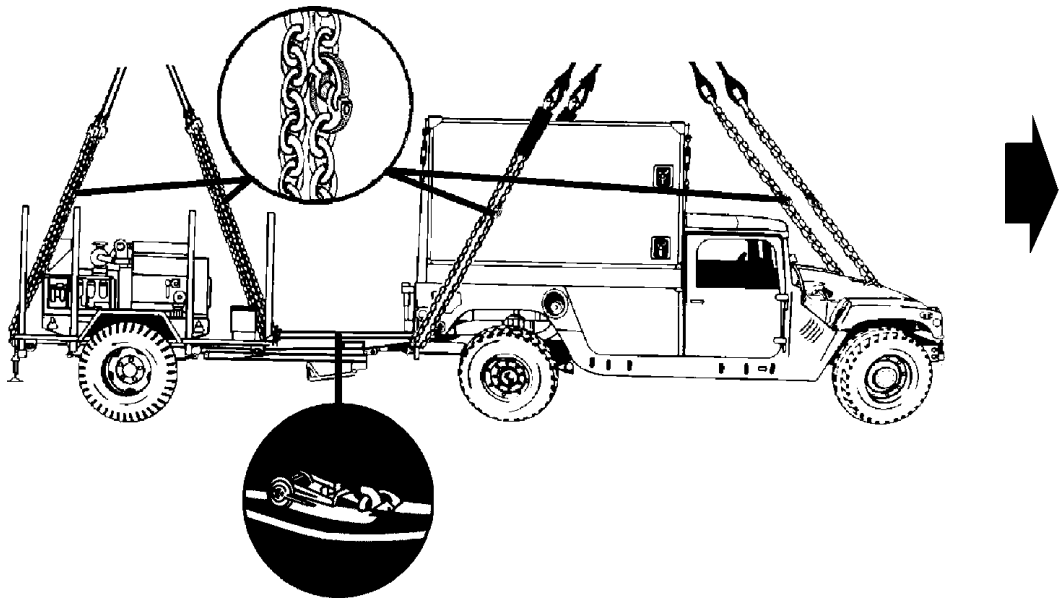
(n) Tighten both CGU-1/B tie-down straps at the same time. Secure the excess strap and safety the ratchet handles in the closed position with tape.

(o) Connect one additional chain length to each chain on each sling set with a coupling link.

(2) Rigging. Rig the load according to the steps in Figure 5-9.

(3) Hookup. Two hookup teams are required for this load. The static wand person discharges the static electricity with the static wand. The forward hookup person kneels on top of the shelter and places apex fitting 1 onto the forward cargo hook. The aft hookup person stands on the generator fender and places apex fitting 2 onto the aft cargo hook. The hookup team then carefully dismounts the trailer and remains close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point.

(4) Derigging. Derigging is the reverse of the preparation and rigging procedures in steps d (1) and d (2).



RIGGING STEPS

1. Position apex fitting on top of the shelter. Route outer sling legs 1and 2 to the front of the vehicle and inner sling legs 3 and 4 to the rear. Sling legs 1 and 3 must be on the left side of the load.

2. Loop the chain end of sling leg 1 through the left front lift provision that protrudes through the hood from inboard to outboard. Place the correct link from Table 5-9 in the grab hook. Repeat with sling leg 2 and the right front lift provision. Secure excess chain with tape or Type III nylon cord.

3. Loop the chain end of the sling legs through their respective lift provisions located on the outer ends of the rear bumper. Place the correct link from Table 5-9 in the grab hook. Secure excess chain with tape or Type III nylon cord.

4. Pad the chain where it contacts the shelter sides.

5. Cluster and tie or tape (breakaway technique) all sling legs together on top of the vehicle to prevent entanglement during hookup and lift-off.

6. Position the apex fitting of sling set 2 on top of the generator set. Route outer sling legs 1and 2 between the two front bows to the front of the generator and inner sling legs 3 and 4 between the two rear bows to the rear of the generator. Sling legs 1 and 3 must be on the left side of the load.

7. Loop the chain end of sling leg 1 through the left front lift provision located on the front of the trailer. Place the correct link from Table 5-9 in the grab hook. Repeat with sling leg 2 through the right front lift provision. Secure excess chain with tape or Type III nylon cord.

8. Loop the chain end of sling leg 3 through the left rear lift provision. Place the correct link from Table 5-9 in the grab hook. Repeat with sling leg 4 through the right rear lift provision. Secure excess chain with tape or Type III nylon cord.

9. Cluster and tie or tape (breakaway technique) all sling legs together on top of the trailer to prevent entanglement during hookup and lift-off.

Figure 5-9. M1097 Shelter Carrier (HMMWV) with S-250 Shelter and Trailer Generator Sets on M116A2 Trailer

5-11. M1097 (HMMWV) with AN/TSQ-183, Counter Battery Radar and MEP802A Generator on M116A3 Trailer

a. Applicability. The following items in Table 5-10 are certified for the helicopter(s) listed in the following table by the US Army Soldier Systems Center:

Table 5-10. M1097 with AN/TSQ-183 Counter Battery Radar and MEP802A Generator on M116A3 Trailer

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/ REAR	TYPE OF AIRCRAFT	RECOMMENDED AIRSPEED (KNOTS)
Truck, 1 1/4-ton, HMMWV with AN/TSQ-183 Counter Battery Radar	8,500	10K	80/3	CH-47	120
MEP802A Generator on M116A3 Trailer	1,580	10K	15/20	CH-47	120

b. Materials. The following materials are required to rig this load:

(1) Sling set (10,000-pound capacity) (2 each).

(2) Tape, adhesive, pressure-sensitive, 2-inch wide roll.

(3) Cord, nylon, Type III, 550-pound breaking strength.

(4) Webbing, cotton, 1/4-inch, 80-pound breaking strength.

(5) Strap, cargo, tiedown, CGU-1/B (4 each).

(6) Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.

c. Personnel. Two persons can prepare and rig the M1097 HMMWV in 15 minutes. Two persons can prepare and rig the generator set in 10 minutes.

d. Procedures. Attach the generator set to the truck by placing the lunette on the pintle hook and securing the latch with tape or Type III nylon cord. Secure the safety chains, cables, and hoses. Position the vehicle on level ground so both the truck and generator set are in a straight line. The following procedures apply to this load:

(1) Preparation. Prepare the load using the following steps:

(a) Fold mirrors inward and tie together with Type III nylon cord. Remove the doors and secure to the seats with Type III nylon cord.

(b) Roll the shelter canvas forward toward the cab. Install the canvas bows over the canvas and secure with tiedowns or Type III nylon cord.

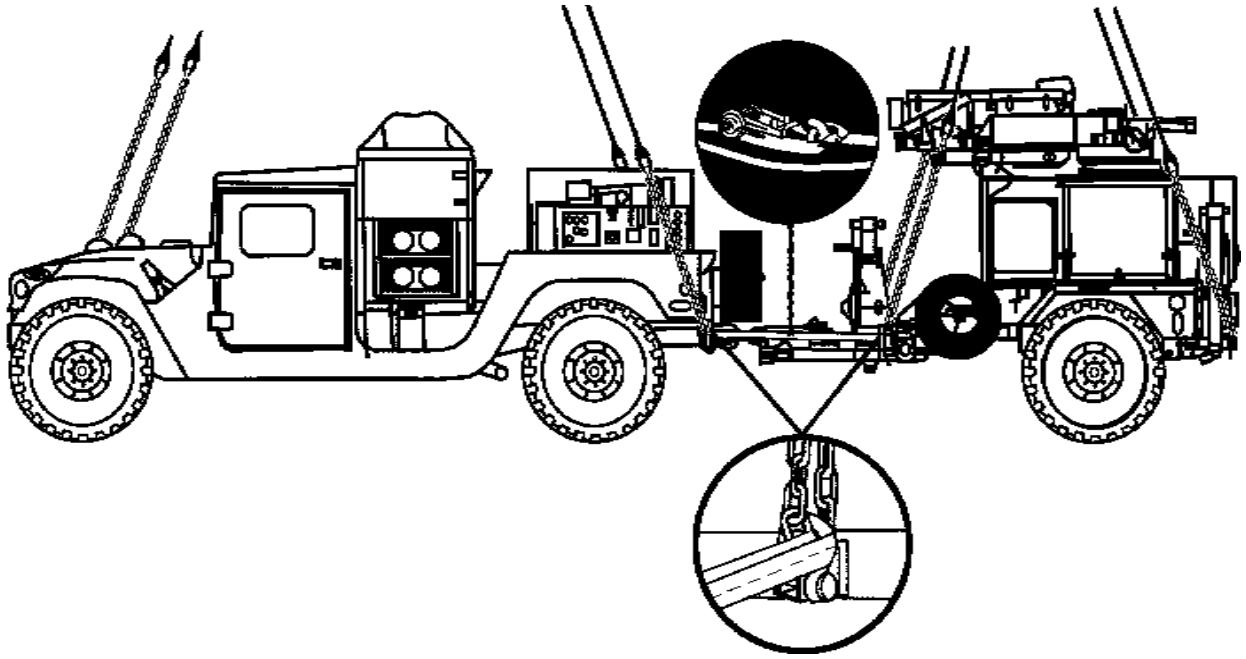
(c) Secure all equipment and cargo inside the truck with tiedown straps, tape, or Type III nylon cord.

(d) Ensure the fuel tanks are not over 3/4 full. Inspect the fuel tank cap, oil filler cap, and battery caps for proper installation.

(e) Engage the vehicle parking brake and put the transmission in neutral.

(f) Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard.

(g) Install the lift provisions on the outer ends of the rear bumper by removing the tiedown provisions located on the front bumper and installing on the outer ends of the front bumper and installing on the outer ends of the rear bumper.



RIGGING STEPS

1. Position reach pendant and apex fitting 1 on top of the roof of the vehicle. Route outer sling legs 1 and 2 to the front of the vehicle and inner sling legs 3 and 4 to the rear. Sling legs 1 and 3 must be on the left side of the load.

2. Loop the chain end of sling leg 1 through the left front lift provision that protrudes through the hood. Place the correct link from Table 5-17 in the grab hook. Repeat with sling leg 2 and the right front lift provision. Secure excess chain with tape or Type III nylon cord.

3. Loop the chain end of sling legs 3 and 4 through their respective lift provisions located on the outer ends of the rear bumper. Place the correct link from Table 5-17 in the grab hook.

4. Cluster and tie or tape (breakaway technique) all sling legs together on top of the vehicle to prevent entanglement during hookup and lift-off.

5. Position the reach pendant and apex fitting of sling set 2 on top of the trailer. Route outer sling legs 1 and 2 to the front of the trailer and inner sling legs 3 and 4 to the rear of the trailer. Sling legs 1 and 3 must be on the left side of the load.

6. Route the chain end of sling leg 1 through the left side loop of the spreader bar, through the left front lift provision located on the front of the trailer, and back through the left loop of the spreader bar. Place the correct link from Table 5-17 in the grab hook. Repeat with sling leg 2 through the right spreader bar loop and right front lift provision. Tie or tape (breakaway technique) sling legs 1 and 2 together at 3-foot intervals on top of the trailer.

7. Loop the chain end of sling leg 3 through the left rear lift provision located on the rear of the trailer. Place the correct link from Table 5-17 in the grab hook. Repeat with sling leg 4 through the right rear lift provision. Secure excess chain with tape or Type III nylon cord. Tie or tape (breakaway technique) sling legs 3 and 4 together at 3-foot intervals on top of the trailer.

Figure 5-17. **M1097 HMMWV with AN/MPQ-64 TQG and HMT with Sentinel ATG**

5-19. M1097, 1-1/4 Ton (HMMWV) with Generator Pallet Group and PU 799 G-85/TPQ-36 Generator Group on M116A3 Trailer

a. Applicability. The following items in Table 5-18 are certified for the helicopter(s) listed in the following table by the US Army Soldier Systems Center:

Table 5-18. M1097, 1-1/4 Ton with Generator Pallet Group and G-85/TPQ-36 Generator Group

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/ REAR	TYPE OF AIRCRAFT	RECOMMENDED AIRSPEED (KNOTS)
Truck, 1-1/4 Ton, HMMWV, M1097	7,400	10K	80/30	CH-47	120
G-85/TPQ-36 Generator Trailer Group	3,075	10K	52/36	CH-47	120

b. Materials. The following materials are required to rig this load:

(1) Sling set (10,000-pound capacity) (2 each).

(2) Tape, adhesive, pressure-sensitive, 2-inch wide roll.

(3) Cord, nylon, Type III, 550-pound breaking strength.

(4) Webbing, cotton, 1/4-inch, 80-pound breaking strength.

(5) Strap, cargo, tie-down, CGU-1/B (2 each, or more as required to secure cargo).

(6) Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.

c. Personnel. Two persons can prepare and rig the HMMWV in 15 minutes. Two persons can prepare and rig the generator set in 10 minutes.

d. Procedures. Attach the generator set to the truck by placing the lunette on the pintle hook and secure the latch. Secure the safety chains, cables, and hoses with tape or Type III nylon cord. Position the vehicle on level ground so both the truck and generator set are in a straight line. The following procedures apply to this load:

(1) Preparation. Prepare the load using the following steps:

(a) Fold mirrors forward in front of the windshield and tie together with Type III nylon cord. Remove the doors and secure to the seats with Type III nylon cord.

(b) Secure all equipment and cargo inside the truck with tiedown straps, tape, or Type III nylon cord.

(c) Ensure the fuel tanks are not over 3/4 full. Inspect the fuel tank cap, oil filler cap, and battery caps for proper installation.

(d) Engage the vehicle parking brake and put the transmission in neutral.

(e) Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard.

(f) Retract the lunette leg and secure with Type III nylon cord.

(g) Secure all lids, doors, and caps with tape or Type III nylon cord.

(h) Ensure the trailer parking brakes are set.

(i) Route the hook portion of a CGU-1/B tiedown strap through the left rear inboard tiedown provision located near the pintle on the rear bumper of the truck and

through the mounting bracket on the front of the trailer A-frame. Connect the hook to the ratchet of the CGU-1/B.

(j) Repeat the above procedure on the right side of the load.

(k) Tighten both CGU-1/B tiedown straps at the same time. Secure the excess strap and safety the ratchet handles in the closed position with tape.

(2) Rigging. Rig the load according to the steps in Figure 5-18.

(3) Hookup. Two hookup teams are required for this load. The static wand person discharges the static electricity with the static wand. The forward hookup person stands in the bed of the truck and places apex fitting 1 onto the forward cargo hook. The aft hookup person stands on the generator fender and places apex fitting 2 onto the aft cargo hook. The hookup team then carefully dismounts the trailer and remains close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point.

(4) Derigging. Derigging is the reverse of the preparation and rigging procedures in steps d (1) and d (2).

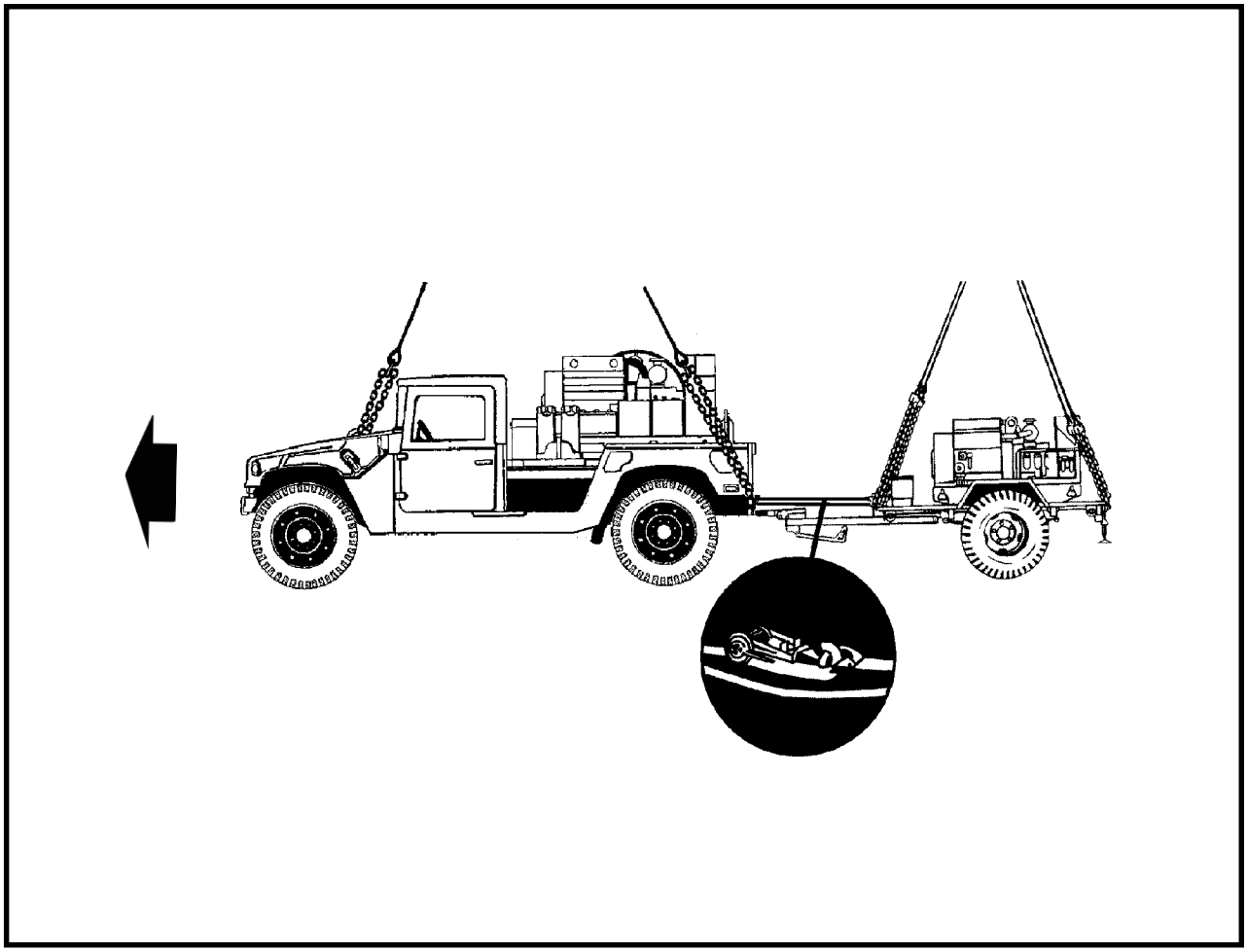


Figure 5-18. M1097, 1-1/4 Ton with Generator Pallet Group and G-85/TPQ-36 Generator Group

RIGGING STEPS

1. Position the apex fitting of sling set 1 in the bed of the vehicle. Route outer sling legs 1 and 2 to the front of the vehicle and inner sling legs 3 and 4 to the rear. Sling legs 1 and 3 must be on the left side of the load.

2. Loop the chain end of sling leg 1 through the left front lift provision that protrudes through the hood. Place the correct link from Table 5-18 in the grab hook. Repeat with sling leg 2 and the right front lift provision. Secure excess chain with tape or Type III nylon cord.

3. Route the chain end of sling leg 3 through the sling guide in the upper left corner of the tailgate. Loop the chain end through the left lift provision on the bumper and thread back through the sling guide in the tailgate. Place the correct link from Table 5-18 in the grab hook. Repeat with sling leg 4 and the right rear lift provision.

4. Cluster and tie or tape (breakaway technique) all sling legs together on top of the vehicle to prevent entanglement during hookup and lift-off.

5. Position apex fitting of sling set 2 on the trailer but not on top of the generator. Route outer sling legs 1 and 2 to the front of the trailer and inner sling legs 3 and 4 to the rear. Sling legs 1 and 3 must be on the left side of the load.

6. Loop the chain end of sling leg 1 through the left front lift provision located near the A-frame on the front of the trailer. Place the correct link from Table 5-18 in the grab hook. Repeat with sling leg 2 through the right front lift provision. Secure excess chain with tape or Type III nylon cord.

7. Route the chain end of sling leg 3 through the left rear lift provision. Place the correct link from Table 5-18 in the grab hook. Repeat with sling leg 4 through the right rear lift provision. Secure excess chain with tape or Type III nylon cord.

8. Pad the chains where they contact the load.

9. Cluster and tie or tape (breakaway technique) all sling legs together on top of the trailer to prevent entanglement during hookup and lift-off.

Figure 5-18. M1097, 1-1/4 Ton with Generator Pallet Group and G-85/TPQ-36 Generator Group (continued)